

**ADMIN RECORD**  
BZ -A-00162

**Operable Unit No. 2  
Proposed Expedited Action**

## **1.0 OBJECTIVE**

This Expedited Action (EA) is specifically for the removal of non-aqueous phase liquid (NAPL) that was encountered in Trench T-3 (IHSS 110). The EA is not intended to characterize or remediate the site. Information obtained during this EA will be used to determine if further removal actions are warranted prior to site remediation.

## **2.0 BACKGROUND INFORMATION**

During the subsurface soil sampling of Trench T3 (IHSS 110) NAPL was encountered while drilling boring B10191 at the western end of Trench T3. The evaluation of sampling results obtained from borings B10191 and B24793 indicate that NAPL is present from 4 to 8 feet below the ground surface.

Two scenarios explaining the physical occurrence of NAPL in the subsurface have been considered in order to develop the approach proposed for recovery of the NAPL. The scenarios listed below are based on information that is available in the HRR (DOE 1992a) and other OU 2 documents (i.e., TM 1).

- 1) The NAPL is uncontained liquid (e.g., lathe coolant, cutting oil, solvent, etc.) disposed of via dumping into the trench when at least a portion of the trench had been backfilled to a depth of approximately four feet below the ground surface.
- 2) The NAPL is containerized liquid (i.e., drummed) and buried within the trench near the depth of four feet below the ground surface.

## **3.0 PLANNING AND OPERATIONS ASSUMPTIONS**

The following assumptions are necessary to limit the scope of field

operations for the EA. If circumstances develop that show more effort is necessary, a second phase may be required.

- No intact drums will be found.

If the results of the magnetic and ground penetrating radar surveys (discussed in section 4.1) indicate the potential to encounter intact drums in Trench T3, this early action will require revision to insure protection to workers.

- NAPL contamination has limited extent.

NAPL contaminated soil is defined as soil that has residual liquid. Residual liquid is defined as that which will flow freely from a soil sample without applying any enhancing process, such as heating or other means. The NAPL determination will be made in the field.

The excavation shall be defined in plan view as the areal extent of the surface soil removed. Since the objective is to remove NAPL, removal of soil from the excavation that does not contain NAPL will be minimized. To the extent practicable the non-NAPL contaminated soil, which may contain other contaminants, will be left in the excavation to be remediated using Soil Vapor Extraction (SVE) or other appropriate remediation actions.

In order to limit the amount of waste generated, the volume of soil and other material (such as crushed drums, boards and other debris) removed from the excavation during this EA shall not exceed ten cubic yards. Since NAPL was encountered at depths less than five feet, the depth of the excavation shall not exceed eight feet.

The excavation is limited to the area around boring B10191 to prevent interference with the SVE operations.

- Adequate storage space for RCRA waste will be available.

Storage capacity for containerized hazardous waste at Rocky Flats may reach the permitted limit in the RCRA Interim Status Operating

Permit. In order to carry out this EA it may be necessary to obtain approval from CDH to increase the hazardous waste storage capacity.

## **4.0 FIELD OPERATIONS**

### **4.1 Geophysical Investigation**

Data from prior magnetic and ground penetrating radar surveys will be interpreted to determine the potential presence of buried intact drums. If the existing data are insufficient, additional data will be acquired.

### **4.2 Excavation**

A rubber tired backhoe will be used for the excavation. Excavated material will be sorted into two categories. The first category will be NAPL contaminated soil which will be containerized in drums or a roll-off container. The second category will be soil that contains VOCs below the action level defined in sections 4.4 through 4.6. That soil will be stockpiled on plastic sheeting outside of the excavation.

The first category containerized contaminated soil shall be used for OU 2 treatability studies if applicable. The stockpiled category two soil will be backfilled into the trench to be subsequently treated with the SVE and ultimately in the final remedy.

If intact drums are discovered during excavation of the trench, appropriate action, based on evaluation of site conditions, shall be implemented to insure that health and safety concerns are met. A decision tree outlining decision logic is attached (Figure 1).

### **4.3 Backfilling**

The trench will be backfilled with the category 2 excavated soil that was stockpiled as described in section 4.2. Any additional (imported) clean fill that may be required will be sampled and analyzed to insure that contaminants are not placed in the excavation.

#### 4.4 Field Screening and Head Space Analysis for Volatile Organic Compounds

Two field screening methods shall be used for determining category 1 and category 2 VOC contaminated soil. Soil will be considered contaminated and subsequently containerized as category 1 soil, if organic vapors greater than 50 ppm are detected using either method.

An initial field screening for soil contamination shall be performed in the field using a portable organic vapor analyzer (OVA). The initial screen will be done as soon as possible after soil has been excavated. Each backhoe bucket full of recently exposed material or the equivalent volume will be field screened by drawing vapors from the soil surface into the OVA.

The second field screening method will be a head space analysis of a grab sample obtained from approximately each cubic yard of soil. The head space analysis is a more accurate field technique that will be used to confirm the initial screening method.

#### 4.5 Field Screening for Radionuclides

Each backhoe bucket full of soil or the equivalent volume will be screened for radionuclides. Radionuclide contamination will be determined with portable beta-gamma and alpha detection instruments. Radionuclide contaminated soil and other material that is removed from the excavation will be containerized. Soil that has an activity level greater than background will be considered contaminated and containerized.

Soil that has gross alpha and gross beta activity levels greater than the mean values obtained from the Rock Creek background area will be considered contaminated and shall be containerized.

#### 4.6 Laboratory Analysis

Level III laboratory analysis (EPA Data Quality Objectives for Remedial Response Activities, March 1987) shall be used to confirm the results of

field screening. Laboratory results shall override the field screening determinations. The samples used for radiation field screens and head space analysis will be split for laboratory analysis. Results of the laboratory analysis and field screenings will be recorded for comparison.

The laboratory sample analysis will be limited to gross-alpha, gross-beta and VOCs that were detected from the sampling results of boring B10191. The samples will be analyzed by a local Colorado Department of Health Certified analytical laboratory. A local laboratory is expected to provide sample results in less than three days.

Sampling and analysis for the purpose of characterizing the contents of containerized waste is not time critical and will be performed according to the appropriate Standard Operating Procedure.

## **5.0 HEALTH AND SAFETY**

A comprehensive Site Specific Health and Safety Plan will be drafted to meet expected health and safety concerns. Based on historical information there is a likelihood of unearthing unknown debris including crushed or full drums, volatile liquids and radioactive material. Due to the nature of the contaminants, precautions will have to be taken to ensure adequate protection of workers, the public and the environment. Of particular concern is the explosive hazard created by the mixing of radiological and organic constituents (i.e., radiolysis) which can create hydrogen gas within drums (see memo from J.L. Anderson dated Feb. 8, 1994, attached).

Examples of safety concerns arising from encountering drums during the excavation are:

Personnel may need to enter a vapor filled excavation which will need shoring.

A filled drum may become ruptured during excavation and cause a spill of the potentially hazardous contents.

## 6.0 SCHEDULE

A preliminary schedule is attached. The schedule does not contain numerous activities that may be required as a result of encountering unanticipated circumstances. Some of the potential unanticipated circumstances are:

Buried intact drums will require characterization and removal of contents possibly by pumping the contents. A potential explosive hazard may exist.

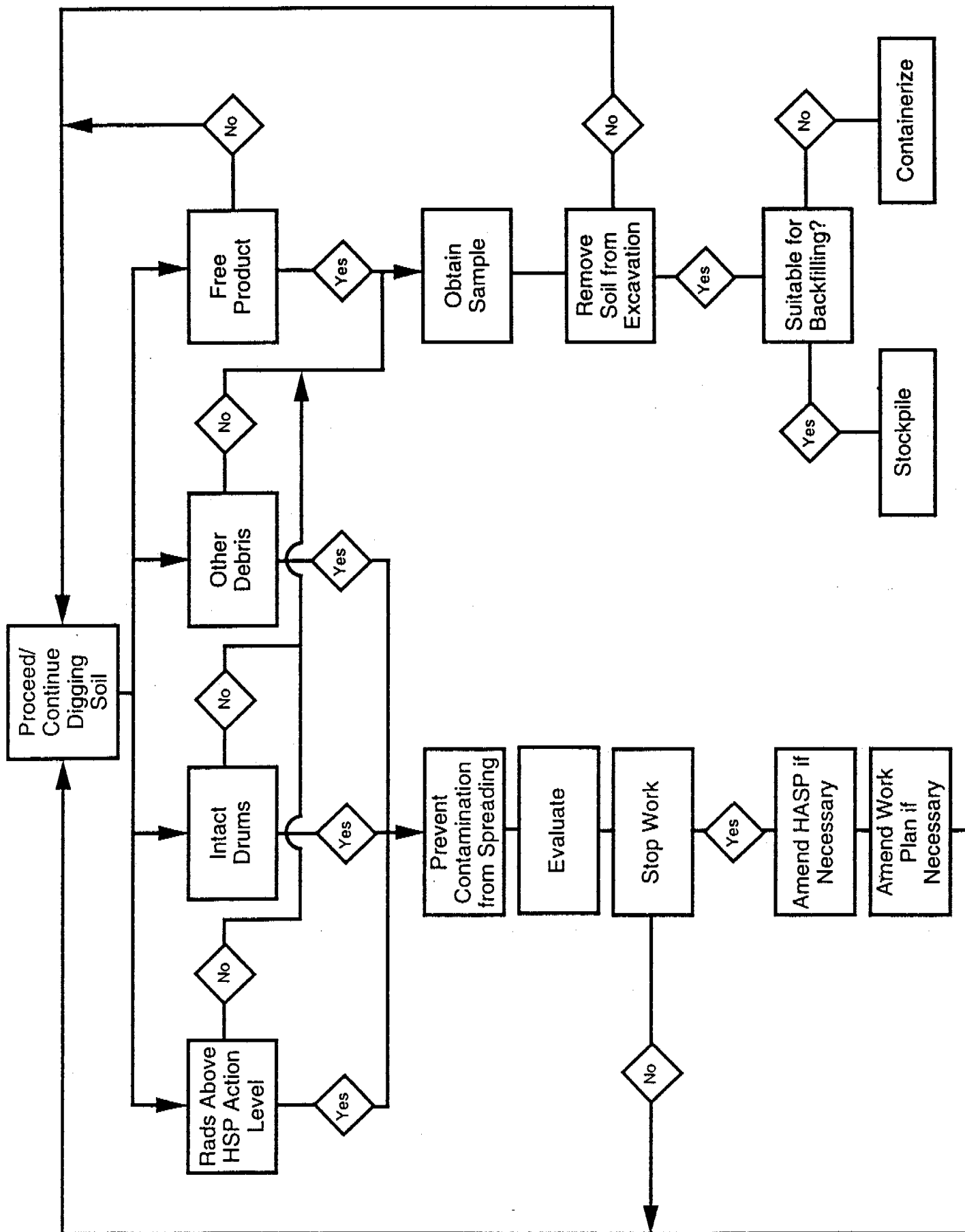
The excavation may be considered a confined space and may require shoring and additional personnel protection if entry is required.

If radiation levels above the action level specified in the Health and Safety Plan are encountered, unanticipated precautions may be required.

In the event that significant quantities of NAPL contaminated material is encountered; a separate removal phase of the EA complete with a revised implementation plan and perhaps a revised Health and Safety Plan may be necessary.

If the free phase liquid is of such extent that a sump and pump are required to efficiently remove the NAPL, then a separate work plan describing an appropriate collection system or venting will be required.

# SOIL EXCAVATION DECISION TREE



ID	Name	Unit	Scheduled St	Scheduled Fin	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
					Qtr 1	Qtr 2	Qtr 3	Qtr 4
1	1 SOW & REQ PREPARATION	18d	3/1/94	3/24/94				
2	1.1 PREPARE SOW/OCV/SOLE SOURCE FOR EA IMPLEMENTATION	5d	3/1/94	3/7/94				
3	1.2 QA REVIEW SOW	1d	3/8/94	3/8/94				
4	1.3 PROCUREMENT REVIEW SOW	1d	3/8/94	3/8/94				
5	1.4 ADDRESS SOW COMMENTS	1d	3/9/94	3/9/94				
6	1.5 OBTAIN LABOR RATES AND PREPARE COST ESTIMATE	2d	3/10/94	3/11/94				
7	1.6 OBTAIN MANAGER APPROVAL OF SOW	1d	3/10/94	3/10/94				
8	1.7 NEPA EVALUATION	10d	3/11/94	3/24/94				
9	1.8 DRAFT PURCHASE REQUISITION	1d	3/1/94	3/1/94				
10	1.9 OBTAIN APPROVALS OF PROCUREMENT PACKAGE	2d	3/2/94	3/3/94				
11	1.10 SUBMIT PROCUREMENT PACKAGE TO PROCUREMENT	0d	3/3/94	3/3/94				
12	2 PROCUREMENT PROCESS	35d	3/4/94	4/21/94				
13	2.1 PROCUREMENT ACCEPTANCE OF PROCUREMENT PACKAGE	1d	3/4/94	3/4/94				
14	2.2 REQUEST FOR PROPOSAL TO SUBCONTRACTOR	2d	3/7/94	3/8/94				
15	2.3 CONTRACTOR DEVELOPS PROPOSAL	21d	3/9/94	4/6/94				
16	2.4 PROCUREMENT REVIEW AND SUBMIT PROPOSAL TO RPM	2d	4/7/94	4/8/94				
17	2.5 RPM TECHNICAL EVALUATION OF PROPOSAL	2d	4/11/94	4/12/94				
18	2.6 COST ANALYSIS BY PURCHASING SUPPORT GROUP	2d	4/7/94	4/8/94				
19	2.7 DOE-RFO REVIEW AND APPROVE COST ANALYSIS	5d	4/11/94	4/15/94				
20	2.8 PROCUREMENT DEVELOPS NEGOTIATION PLAN	1d	4/18/94	4/18/94				
21	2.9 CONTRACT NEGOTIATIONS	1d	4/19/94	4/19/94				
22	2.10 PROCUREMENT CONTRACT AWARD PROCESSING	2d	4/20/94	4/21/94				
23	2.11 CONTRACT AWARD	0d	4/21/94	4/21/94				
24	3 OBTAIN PERMITS AND MOBILIZE	50d	4/22/94	6/30/94				
25	3.1 EA IMPLEMENTATION PLAN	25d	4/22/94	5/26/94				
26	3.1.1 SUBCONTRACTOR PREPARE IMPLEMENTATION PLAN	15d	4/22/94	5/12/94				
27	3.1.2 INTERNAL REVIEW EA IMPLEMENTATION PLAN	2d	5/13/94	5/16/94				
28	3.1.3 SUBMIT EA IMPL PLAN TO DOE	0d	5/16/94	5/16/94				
29	3.1.4 DOE REVIEW DRAFT EA IMPLEMENTATION PLAN	5d	5/17/94	5/23/94				
30	3.1.5 ADDRESS DOE COMMENTS ON DRAFT EA IMPL PLAN	3d	5/24/94	5/26/94				
31	3.1.6 SUBMIT DRAFT EA IMPL PLAN TO EPA/CDH	0d	5/26/94	5/26/94				
32	3.2 FINAL EA IMPLEMENTATION PLAN	20d	5/27/94	6/23/94				
33	3.2.1 EPA/CDH REVIEW DRAFT EA IMPL PLAN	10d	5/27/94	6/6/94				
34	3.2.2 ADDRESS EPA/CDH COMMENTS ON DRAFT EA IMPL PLAN	5d	6/10/94	6/16/94				
35	3.2.3 SUBMIT FINAL EA IMPL PLAN TO DOE/EPA/CDH	0d	6/16/94	6/16/94				
36	3.2.4 DOE/EPA/CDH REVIEW FINAL EA IMPL PLAN	5d	6/17/94	6/23/94				
37	3.2.5 OBTAIN APPROVAL EA IMPLEMENTATION PLAN	0d	6/23/94	6/23/94				
38	3.3 HASP PREP & APPROVAL	41d	4/22/94	6/17/94				
39	3.3.1 DRAFT HASP PREP & SUBMITTAL	21d	4/22/94	5/20/94				
40	3.3.2 EG&G REVIEW HASP	10d	5/23/94	6/3/94				
41	3.3.3 ADDRESS HASP COMMENTS	5d	6/6/94	6/10/94				
42	3.3.4 HASP APPROVED	0d	6/10/94	6/10/94				
43	3.3.5 HASP & SOP TRAINING	5d	6/13/94	6/17/94				
44	3.4 IWCP PREPARE AND APPROVAL	20d	4/22/94	5/19/94				
45	3.4.1 PREPARE IWCP	10d	4/22/94	5/5/94				
46	3.4.2 IWCP INTERNAL REVIEW	5d	5/6/94	5/12/94				
47	3.4.3 IWCP COMMENT RESOLUTION	5d	5/13/94	5/19/94				

Project: OU 2 EA SCHEDULE

Date: 2/10/94

Critical



Progress



Summary



Noncritical



Milestone



Rolled Up



ID	Name	units	Scheduled St	Scheduled Fin	1st Quarter				2nd Quarter				3rd Quarter				4th Quarter			
					Qtr 1				Qtr 2				Qtr 3				Qtr 4			
48	3.4.4 IWCP APPROVAL	0d	5/19/94	5/19/94																
49	3.5 EQUIPMENT MOBILIZATION	9d	6/20/94	6/30/94																
50	3.5.1 PREPARE FOR QA READINESS REVIEW	5d	6/20/94	6/24/94																
51	3.5.2 PERFORM OPERATIONAL READINESS REVIEW	1d	6/27/94	6/27/94																
52	3.5.3 EQUIPMENT MOBILIZATION	3d	6/28/94	6/30/94																
53	4 PERFORM EA FIELDWORK	18d	7/1/94	7/26/94																
54	4.1 GEOPHYSICAL SURVEYS	5d	7/1/94	7/7/94																
55	4.2 EXCAVATING AND SAMPLING	10d	7/8/94	7/21/94																
56	4.3 DEMOBILIZATION	3d	7/22/94	7/26/94																
57	5 LABORATORY ANALYSES	35d	7/22/94	9/6/94																
58	5.1 STORE/SHIP/SCREEN SAMPLES	5d	7/22/94	7/28/94																
59	5.2 HOT LABORATORY SAMPLE TURNAROUND	30d	7/29/94	9/8/94																
60	5.3 COLD LABORATORY SAMPLE TURNAROUND	30d	7/29/94	9/8/94																
61	6 DATA VALIDATION & RFEDS	35d	9/9/94	10/27/94																
62	6.1 RFEDS	30d	9/9/94	10/26/94																
63	6.2 DATA VALIDATION	5d	10/21/94	10/27/94																
64	7 PREPARE DRAFT EA REPORT	40d	9/9/94	11/3/94																
65	7.1 PREPARE EA DRAFT REPORT	21d	9/9/94	10/7/94																
66	7.2 INTERNAL REVIEW OF DRAFT EA REPORT	5d	10/10/94	10/14/94																
67	7.3 ADDRESS INTERNAL COMMENTS DRAFT EA REPORT	5d	10/17/94	10/21/94																
68	7.4 SUBMIT DRAFT EA REPORT TO DOE	0d	10/21/94	10/21/94																
69	7.5 DOE REVIEW DRAFT EA REPORT	5d	10/24/94	10/28/94																
70	7.6 ADDRESS DOE COMMENTS ON DRAFT EA REPORT	4d	10/31/94	11/3/94																
71	7.7 TRANSMIT DRAFT EA REPORT TO AGENCIES	0d	11/3/94	11/3/94																
72	8 PREPARE FINAL EA REPORT	20d	11/4/94	12/1/94																
73	8.1 EPA/CDH REVIEW DRAFT EA REPORT	10d	11/4/94	11/17/94																
74	8.2 ADDRESS EPA/CDH COMMENTS ON DRAFT EA REPORT	5d	11/18/94	11/24/94																
75	8.3 SUBMIT FINAL EA REPORT FOR DOE/EPA/CDH APPROVAL	0d	11/24/94	11/24/94																
76	8.4 OBATIN EA REPORT APPROVAL	5d	11/25/94	12/1/94																
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Project OU 2 EA SCHEDULE  
Date: 2/10/94

Critical   
Noncritical 

Progress   
Milestone 

Summary   
Rolled Up 

## INTEROFFICE CORRESPONDENCE

DATE: February 08, 1994

TO: D. L. Schubbe, Remediation Projects Management, Bldg. 080, X8709

FROM: J. L. Anderson, Radiological Engineering, Bldg. 080, X6974

SUBJECT: RADIOLOGICAL ENGINEERING INITIAL REVIEW OF POSSIBLE HAZARDS IN THE  
INDIVIDUAL HAZARDOUS SUBSTANCE SITE 110 - JLA-004-94

(a) G. W. Baughman ltr, to R. J. Schassburger, Pond Water Management  
IM/IRA Information, March 3, 1993

This memorandum is to document discussions that have taken place between Radiological Engineering (RE) and Remediation Projects Management (RPM) regarding the possible excavation within Individual Hazardous Substance Site (IHSS) 110.

A preliminary review has been conducted by RE regarding the radiological hazards associated with the possible remediation effort of the 110 IHSS. According to the Historical Release Report (HRR), this burial trench (T-3) contains plutonium and uranium contaminated sewage sludge, flattened drums that once contained contaminated oils, and possibly contains contaminated water and lathe coolant. There are two reasons to believe that some or all of the contaminated coolant and water are located in IHSS 110.

1. During the installation of the Soil Vapor Extraction unit, the subcontractor discovered that there was free product (i.e. unencapsulated organic contaminants) present in the borehole. This would seem to confirm the presence of the contaminated lathe coolant or possible other undocumented organics in this trench.
2. There is also a reported source [Reference (a)] of tetrachloroethene in the east trenches that is being carried by the groundwater and then discharged into B-2 Pond. The 110 trench is one of the closest and the most upgradient to the B-2 Pond and could be the source of this contamination.

The major problem foreseen with this intended remediation will be if the hazardous solvents or oils are containerized in drums in the trench. Plutonium in solution, when in long term contact with plastics, hydrocarbons, or water, can cause radiolysis to occur. This process can result in the formation of hydrogen and oxygen gases and the possible generation of hydrochloric acid. These formations could result in overpressurization of the drums, creation of an explosive mixture within the drum, as well as loss of integrity of the drum itself.

D. L. Schubbe  
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February 8, 1994  
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Hydrogen generation in plutonium contaminated wastes has been identified as a potential problem at another Department of Energy site, specifically at the Waste Isolation Pilot Project. If we do expect to find drums containing contaminated hydrocarbons, we might canvass this site and see how they have dealt with or plan to deal with this unique situation.

The materials removed from the excavation of this trench would have to be treated as a potential waste stream. All wastes generated would have to be packaged, labeled, and stored in accordance with all applicable plant policies and procedures that govern the waste handling activities.

Please contact me directly with any concerns or questions about the above correspondence. I may be reached at Extension 6974 or on Digital Page 3518.

cc:  
G. M. Aldrich  
K. D. Anderson  
M. C. Broussard  
R. C. Gentry  
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